

**DATE:**

**TO:** District Engineers

**THROUGH:** Eric H. Bartsch, P.E., Director  
Office of Water Programs

**FROM:** Allen R. Hammer, P.E., Director  
Division of Water Supply Engineering

**SUBJECT:** Water - Design - Chlorine Disinfection and Monitoring

**DELETE:** Working Memo Nos. 129, 231, 383, 518, 712, and 718

**Continuous Chlorine Monitors (CCMs)**

**1. Procedure**

All continuous type chlorine residual monitors are accepted equipment provided a daily comparison test using one of the four methods listed in *Standard Methods* confirms reasonable accuracy.

In this case reasonable accuracy means compliance with the following table:

<u>CHLORINE RESIDUAL RANGE</u>	<u>MAXIMUM ALLOWABLE VARIATION</u>
0 - 0.5 mg/L	0.1 mg/L
> 0.5 mg/L	25 %

When a confirmation analysis is outside this range, the CCM should be recalibrated.

Continuous monitoring generally means that a chlorine residual sample should be taken at least every 5 minutes. Audible and/or visual alarms are also highly recommended. We strongly suggest that waterworks owners include a demonstration clause in their purchase agreement with the supplier if possible.

**2. Recording Equipment**

Since waterworks owners are required to report the duration of any lapse in chlorine residual below 0.2 mg/L, automated recording equipment is also required. Day charts showing the recorded chlorine residual level should be maintained in the owners files. Such charts could prove to be crucial in demonstrating adequate treatment should a question arise at a later date.

**3. CT Requirements**

Most waterworks have to maintain a chlorine residual leaving their plant well above 0.2 mg/L to meet CT requirements or to maintain effective chlorine residuals throughout their distribution systems. We require that waterworks use grab samples and *Standard Methods* laboratory procedures to officially monitor chlorine residuals for CT purposes.

**Disinfection of Waterlines (AWWA C-651) and Storage Tanks (AWWA C-652)**

Engineering specifications for disinfection of storage tanks and waterlines may reference the applicable AWWA standards or the *Waterworks Regulations*. Since the AWWA Standards are copyrighted, any copy of the standard is a violation of the copyright and cannot be required.

**Water Sure 101 Tablet Chlorinator**

The Water-Sure 101 Tablet Chlorinator is acceptable for use in Virginia. The unit is best suited for use in remote areas (where power supply may be a problem) and/or in conjunction with spring sources, especially where pumping is not required. Wherever this unit is installed for disinfection purposes, the following operational requirements must be met:

- 1) Daily attendance by operational personnel.
- 2) Daily effluent and distribution chlorine residual testing.
- 3) Daily check/cleanout of "Y" strainer.
- 4) All general conditions and requirements of the Waterworks Regulations continue to apply

**Heating of Chlorine Rooms**

Chlorine gas reacts explosively or forms explosive compounds with fuel gas and other hydrocarbons; consequently the use of gas heaters in chlorine rooms is prohibited.